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# United States Department of Agriculture.

DIVISION OF BOTANY.

## HUNGARIAN BROME GRASS.

### GENERAL HABIT.

Hungarian brome grass (*Bromus inermis*) is a vigorous, hardy perennial with strong creeping rootstocks, smooth, upright, leafy stems 1 to 3 feet high, and a loose, open panicle or head. It is a native of



HUNGARIAN BROME (*Bromus inermis*). 1. Entire plant. 2. The panicle. 3. The upper leaf. 4. A spikelet. 5. The empty glumes. 6. Flowering glume. 7. Palea.

Europe, ranging from France eastward into Siberia, and grows along roadsides, river banks, borders of fields and woods, and upon sterile hillsides and pastures.\*

\* *Description*.—Stems smooth, isolated (not tufted), upright, 1 to 3 feet high, from much branched, extensively creeping, tough rootstocks which send out root fibers at every joint. Leaves 4 to 6 on each stem, or even more on the flowerless shoots, smooth, flat, rather thin, spreading about one-fourth inch wide and 5 to 10 inches long, very acute at the apex; the sheaths of the leaves are closed about the stem, excepting for a short distance near the top. Panicle, 4 to 8 inches long, the branches at first erect, widely spreading during bloom, becoming erect again in fruit. Spikelets pale green, about 1 inch long, narrow, only slightly flattened, 6 to 10-flowered. Flowering glumes smooth, distinctly nerved, awnless or with a very short awn, the thin scarious margins tinged with brown. Anthers orange-yellow. Grain adherent to the glume and palea (chaff), hairy at the apex.



## HISTORY.

One hundred and twenty-five years ago Schreber published an extended description and excellent figure of this grass, couch-brome he called it, in his "Beschreibung der Gräser." In addition to the usual enumeration of the stations in which the grass grew naturally, Schreber refers to the occurrence of the plant in a grass garden at Halle. He points out minutely the peculiarities of this brome, describing its habit of producing a great abundance of creeping rootstocks, and because of this habit he regarded its uses as limited. Schreber cites Stillingfleet as authority for the statement that it must be a good forage plant, especially for sheep, because it grew upon the pastures of Aschersleben, which had become widely celebrated for the production of mutton of superior excellence and flavor.

There is a good description of Hungarian brome in Miller's Gardener's Dictionary (edition of 1807), where it is called awnless brome-grass. The roots are characterized as "extremely creeping like quich," another name for couch-grass (*Agropyrum repens*). There is no intimation that it has any agricultural value.

Sinclair, in the third edition of "Hortus Gramineus Woburnensis" (1826), describes this grass, and reports in detail the produce at the time of flowering, "from a black siliceous sandy loam." He states that it has the property of impoverishing the soil equally with common couch-grass, which it resembles in its "powerfully creeping" roots, and in consequence of this habit its yield at first is much greater than afterwards. To Sinclair this grass appeared to be inferior to most others, and to "offer no grounds on which to recommend it to the notice of the agriculturist."

Stebler and Schroeter (in 1884) gave an exhaustive illustrated account of Hungarian brome in part 2 of their work on "The Best Forage Plants." These authors report that from experiments conducted for thirty years at Magocs, Hungary, the powers of the grass for resisting long protracted drought, when all other vegetation succumbed, were fully demonstrated. It had then only recently been introduced into cultivation, chiefly in Hungary.

From the records at hand it appears that Hungarian brome was first introduced into the United States from France by the agricultural experiment station at Berkeley, California. In Bulletin No. 22, of that station, issued November 15, 1884, the seed of this grass is offered for distribution, and the statement made that "our experience indicates that it will do well here [California] either without or with irrigation." During the past five or six years this grass has been cultivated at a number of the agricultural experiment stations in various parts of the country and also by farmers in many sections, particularly in California and Kansas.



## NAME.

The name Hungarian brome doubtless originated from the fact that the cultivation of the grass was first undertaken, or, at least, first brought to general notice in Hungary. Awnless brome, a name sometimes applied to it, is simply a translation of the Latin name *Bromus inermis*. The name couch-brome was employed by Schreber because of the resemblance of the grass to common couch, as already pointed out.

## FORAGE VALUE AND YIELD.

While this grass will grow on lands too poor for the more valued agricultural grasses, and under conditions of climate which would entirely preclude the culture of these last, its productiveness depends, as in other cases, upon the amount and availability of the food supply. In other words, the better the conditions the better the growth. The reported yield is 1 to 3 tons to the acre. At the central experimental farm, Ottawa, Canada, the pure-plot culture gave at one cutting a yield of  $3\frac{3}{4}$  tons of cured hay. As cultivated at the experiment stations this grass certainly presents a fine appearance, and the station reports, nearly without exception, praise it in the highest terms. It is evident from these reports that the grass is little influenced by changes of climate. In Canada, in Mississippi, Kansas, Colorado, Wyoming, and California it appears to do equally well. It is resistant to intense cold, to sudden and extreme changes of temperature, and withstands protracted drought better than any other cultivated variety. In ordinary and poor soils the stems are only 12 to 18 inches high; under most favorable conditions they attain the height of 3 to 4 feet. The underground stems (rootstocks) grow most rapidly in light, sandy loam, but they penetrate with apparent ease the stiffest clays, and in all cases form a dense, tough sod.

Hungarian brome ought to be cut when first coming into bloom. After this period the stems rapidly become hard and woody, and valueless for hay. At present, however, this grass is esteemed more for grazing. In the Southern States it remains green throughout the year, and in some sections may prove to be valuable for winter pastures. In portions of the arid regions of the West and in parts of California, where the finer grasses have failed, this brome has in general grown well and promises to be of great value.

The seed of Hungarian brome may be obtained from the leading seedsmen in the larger cities. The amount required per acre is variously given at from 30 to 50 pounds. It may be sown in the autumn with winter wheat, or in early spring; for the Southern States, February or March. The preparation of the land is the same as for other grasses or grain. In the North it blooms in June and, of course, somewhat earlier in the Southern States. It is usually sown unmixed, because of its liability to choke out other plants. In Hungary it is sometimes

mixed with lucerne in proportion of 3 to 2. In the formation of permanent pastures, various grasses and clovers, where these will grow, ought to be mixed with it.

#### CHEMICAL ANALYSIS.

From Bulletin No. 11, Iowa Agricultural Experiment Station, the following analyses are drawn:

##### *Samples.*

No. 1, cut May 8.....	Height 16 inches.
No. 2, cut May 18.....	Height 20 inches.
No. 3, cut May 28.....	
No. 4, cut June 7 .....	Early bloom.
No. 5, cut June 21 .....	After bloom.

##### *Table of Analyses.*

Samples.	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.
Moisture .....	78.84	74.40	73.44	69.36	69.15
Dry matter.....	21.16	25.60	26.56	30.64	30.87
100 parts dry matter contain—					
Crude ash.....	11.02	11.03	10.08	9.77	10.24
Ether extract (crude fat).....	5.66	3.71	2.61	2.43	1.00
Nitrogen-free extract (carbohydrates).....	35.40	39.64	40.57	43.02	41.77
Crude fiber.....	21.65	24.50	29.11	32.33	31.51
Crude protein (N x 6.25).....	26.27	21.12	17.63	12.45	11.92
True albuminoids (albuminoid N x 6.25) .....	19.72	15.80	13.60	10.26	8.96

The nutritive ratio, estimated by the North Carolina station (Bull. No. 73), is 1 to 7.1, and the relative feeding value per ton is \$12.79.

#### CONCLUSIONS.

The use of this grass for holding the banks of ditches and strengthening the turf of sandy soil was noted by Schreber. In light soils, especially in regions subject to extremes of heat or long periods of drought, or where the land can not be adapted to the growth of the finer and higher-grade grasses, Hungarian brome may be recommended. It is doubtless valuable as a constituent in permanent meadows or pastures, and may have especial value in the South for winter grazing. On lands where frequent rotation is practiced or desired its introduction should be made with caution, because it may there prove a pest hardly less troublesome than common couch or witch grass.

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